CLAIMS

WHAT IS CLAIMED:

1. A multi-spectral detector for use in a passive /active system, comprising:
an optically dispersive element capable of separating received LADAR and radiation received from a scene into a plurality of spectral components and distributing the separated spectral components; and
a detector array including:
a plurality of detectors capable of detecting the LADAR radiation; and
a plurality of detectors capable of detecting the spectral components of the scene radiation; and
an integrated circuit capable of generating a plurality of electrical signals representative of predetermined characteristics of the detected LADAR radiation and the detected spectral components.

2. The detector of claim 1, wherein the optically dispersive element comprises a diffraction grating or a linear variable filter.

3. The detector of claim 2, wherein the optically dispersive element is integrated with the detector array.

4. The detector of claim 1, wherein the optically dispersive element is integrated with the detector array.

5. The detector of claim 1, wherein the detectors capable of detecting the LADAR radiation or the detectors capable of detecting the spectral components of the scene radiation comprise QWIPs or EQWIPs.

6. The detector of claim 1, wherein the detectors capable of detecting the LADAR radiation or the detectors capable of detecting the spectral components of the scene radiation have varied widths and are separated by varied pitches.

7. The detector of claim 6, wherein the detectors capable of detecting the LADAR radiation or the detectors capable of detecting the spectral components of the scene radiation comprise QWIPs or EQWIPs.

8. The detector of claim 1, wherein the detector array is integrated with the integrated circuit.

9. The detector of claim 8, wherein the optically dispersive element is integrated with the detector array.

10. A multi-spectral detector for use in a passive /active system, comprising:
means for distributing a plurality of spectral components of received LADAR and infrared radiation received from a scene;
means for detecting the distributed LADAR radiation;
means for detecting the spectral components of the infrared radiation; and
means for generating a plurality of electrical signals representative of predetermined characteristics of the detected LADAR radiation and the detected spectral components.

11. The detector of claim 10, wherein the distributing means diffracts the received LADAR and infrared radiation.

12. The detector of claim 11, wherein the distributing means comprises a diffraction grating.

13. The detector of claim 10, wherein the distributing means comprises a diffraction grating.

14. The detector of claim 10, wherein the distributing means is integrated with the detecting means.

15. The detector of claim 10, wherein the detecting means comprises QWIPs or EQWIPs.

16. The detector of claim 10, wherein detecting means comprises a plurality of detectors have varied widths and are separated by varied pitches.

17. The detector of claim 10, wherein the detecting means is integrated with the generating means.

18. An imaging system, comprising:
a laser capable of transmitting LADAR radiation;

a multi-spectral detector for use in a passive /active system, comprising:

an optically dispersive element capable of separating received LADAR and radiation received from a scene into a plurality of spectral components and distributing the separated spectral components; and

a detector array including:

a plurality of detectors capable of detecting the LADAR radiation; and

a plurality of detectors capable of detecting the spectral components of the scene radiation; and

an integrated circuit capable of generating a plurality of electrical signals representative of predetermined characteristics of the detected LADAR radiation and the detected spectral components; and

a processor for processing the electrical signals.

19. The imaging system of claim 18, wherein the optically dispersive element comprises a diffraction grating or a linear variable filter.

20. The imaging system of claim 18, wherein the optically dispersive element is integrated with the detector array.

21. The imaging system of claim 18, wherein the detectors capable of detecting the LADAR radiation or the detectors capable of detecting the spectral components of the scene radiation comprise QWIPs or EQWIPs.

22. The imaging system of claim 18, wherein the detectors capable of detecting the LADAR radiation or the detectors capable of detecting the spectral components of the scene radiation have varied widths and are separated by varied pitches.

23. The imaging system of claim 18, wherein the detector array is integrated with the integrated circuit.

24. A method for use in identifying an object in a field of view, comprising:

passively detecting radiation from a scene, the detection employing a detector array; and

actively detecting LADAR radiation through the detector array in parallel with passively detecting the scene radiation.

25. The method of claim 24, wherein passively detecting scene radiation includes passively detecting infrared radiation.

26. The method of claim 25, wherein passively detecting infrared radiation includes passively detecting hyperspectral infrared radiation.

27. The method of claim 24, wherein passively detecting scene radiation includes passively detecting hyperspectral scene radiation.

28. The method of claim 24, further comprising receiving the scene and LADAR radiation through the same optical train.

29. The method of claim 28, wherein detecting the scene and LADAR radiation includes separating the received LADAR and scene radiation into a plurality of spectral components and distributing the separated spectral components across the detector array.

30. The method of claim 24, further comprising generating a plurality of electrical signals representative of predetermined characteristics of the detected LADAR radiation and the detected spectral components.

31. An apparatus for use in identifying an object in a field of view, comprising:
means for passively detecting scene radiation employing a detector array; and
means for actively detecting LADAR radiation through the detector array in parallel with passively detecting the scene radiation.

32. The apparatus of claim 31, wherein the means for passively detecting scene radiation includes means for passively detecting infrared radiation.

33. The apparatus of claim 31, wherein the means for passively detecting scene radiation includes means for passively detecting hyperspectral scene radiation.

34. The apparatus of claim 31, further comprising means for receiving the scene and LADAR radiation through the same optical train.

35. The apparatus of claim 31, further comprising means for generating a plurality of electrical signals representative of predetermined characteristics of the detected LADAR radiation and the detected spectral components.

36. A method, comprising:
receiving LADAR and scene radiation from a field of view;
separating the received LADAR and scene radiation into a plurality of spectral components;
directing the spectral components to respective detectors;
detecting the spectral components; and
generating an electrical signal representative of predetermined characteristics of the detected spectral components.

37. The method of claim 36, wherein receiving the scene radiation includes receiving infrared radiation.

38. The method of claim 36, wherein receiving the scene radiation includes receiving hyperspectral scene radiation.

39. The method of claim 36, wherein receiving the scene and LADAR radiation includes receiving the scene and LADAR radiation through the same optical train.

40. An apparatus, comprising:
means for receiving LADAR and scene radiation from a field of view;
means for separating the received LADAR and scene radiation into a plurality of spectral components;
means for directing the spectral components to respective detectors;
means for detecting the spectral components; and
means for generating an electrical signal representative of predetermined characteristics of the detected spectral components.

41. The apparatus of claim 40, wherein the means for receiving the scene radiation includes means for receiving infrared radiation.

42. The apparatus of claim 40, wherein the means for receiving the scene radiation includes means for receiving hyperspectral scene radiation.

43. The apparatus of claim 40, wherein the means for receiving the scene and LADAR radiation includes means for receiving the scene and LADAR radiation through the same optical train.